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In The

Supreme Court of the United States

October Term, 1962

No. 416

IN THE MATTER OF THE APPLICATION OF

ANDREW ALFORD, PETITIONER,

FOR

COAXIAL CHOKE COUPLER

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

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Andrew Alford prays that a writ of certiorari issue to review the judgment of the United States Court of Custom and Patent Appeals, entered in the above-entitled case on April 13, 1962.

Citations to Opinions Below

The Patent Office Examiner's final rejection (R. 21-22), the Examiner's Answer (R. 60-63) to petitioner's brief on appeal in the Patent Office, and the opinion of the Patent Office Board of Appeals (R. 63-67) are unreported and appear in the printed record. The majority opinion of the Court of Customs and Patent Appeals and the two dissenting opinions of Judges Rich and Smith, printed in Appendix A hereto, are reported in 300 F.2d 929[1], 133 U.S.P.Q. 281.

[1] Headnote 1 in the West Report incorrectly states that the majority concluded that petitioner Alford's invention did not produce new and unexpected results. There is nothing in the majority opinion to support such a statement.

Jurisdiction

The judgment of the Court of Customs and Patent Appeals was entered on April 13, 1962. *Infra*, p. 28. A timely petition for rehearing filed May 3, 1962 was denied on June 8, 1962. The jurisdiction of this Court is invoked under 28 U.S.C. § 1256.

Questions Presented

1. Whether the constitutional provisions in Article III, § § 1-2, conferring the judicial power in such inferior courts established by Congress with appellate jurisdiction in this Court under such regulations as Congress shall make, permits this Court to conclude that it has no jurisdiction to review a judgment of the Court of Customs and Patent Appeals finally denying petitioner the grant of a patent when Congress has exercised its power under Article I, § 8 in establishing that Article III court and enacted a statute authorizing this Court to review cases in the Court of Customs and Patent Appeals by writ of certiorari.

2. Whether the "subject matter as a whole" referred to in 35 U.S.C. § 103, the statutory provisions defining the conditions for patentability in terms of what would be obvious to a man of ordinary skill in the field of the invention sought to be patented, embraces results, principles of operation, and the cause of a problem as well as the new structure created by the inventor in the light of his discovery of new and unexpected results and principles of operation overlooked by prior inventors having extraordinary skill in the art.

3. Whether the provisions of 35 U.S.C. § 103, which condition the grant of a patent on the subject matter as a whole being not obvious to a man of ordinary skill, have been correctly applied by the court below in determining the patentability of a new structure involving only a slight change in form from the prior art structure, the new structure embodying the discovery of a

new principle of operation to produce new and unexpected results, when a majority of that court adopt the statement by the Examiner:

> The contention that the combination produces a new and unexpected result is not considered persuasive since the result set forth by applicant is inherent in the obvious combination of the references and hence does not confer patentability on the claimed combination (R. 62-63).

4. Whether petitioner Alford, elected a Fellow in the Institute of Radio Engineers (IRE) in 1942, made a patentable invention when he discovered that by changing the form of the prior art conventional coaxial choke couplers for transmitting wideband high frequency radio energy and blocking low frequency radio energy having sleeve joints in both inner and outer conductors as taught by the American inventor Salisbury and the British inventor Espley, elected IRE Fellows in 1947 and 1954, respectively, to include a disc line joint in the outer conductor instead of the sleeve joint, he effected a considerable reduction in undesired high frequency radiation, a third patentee teaching that it didn't make any difference whether you used a sleeve joint or a disc joint in the outer conductor of his device which could not block low frequency energy and could efficiently transmit high frequency radio energy at only a single frequency.

Constitutional Provisions Involved

The Congress shall have Power . . .

To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

To constitute Tribunals inferior to the supreme Court; . . . U. S. Const. art. 1, § 8.

The judicial Power of the United States, shall be vested in one supreme Court, and in such inferior Courts as the Congress may from time to time ordain and establish. The Judges, both of the supreme and inferior Courts, shall hold their Offices during good Behavior, and shall, at stated Times, receive for their Services, a Compensation, which shall not be diminished during their Continuance in Office. U.S. Const. art. 3, § 1.

The judicial Power shall extend to all Cases, in Law and Equity, arising under this Constitution, the Laws of the United States . . . —to Controversies to which the United States shall be a Party. . . .

In all Cases affecting Ambassadors, other public Ministers and Consuls, and those in which a State shall be Party, the supreme Court shall have original Jurisdiction. In all the other Cases before mentioned, the supreme Court shall have appellate Jurisdiction, both as to Law and Fact, with such Exceptions, and under such Regulations as the Congress shall make. U.S. Const. art. 3, § 2.

Statutes Involved

Cases in the Court of Customs and Patent Appeals may be reviewed by the Supreme Court by writ of certiorari, 28 U.S.C. § 1256.

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made. 35 U.S.C. § 103.

Statement

On April 22, 1958 the Patent Office Examiner filed a final rejection refusing to grant petitioner Alford a patent covering his invention in the radio-electronics field of a Coaxial Choke Coupler. Petitioner Alford then filed an affidavit (R. 22) with an accompanying Exhibit 1 (R. 23-53) containing comparative tests between his invention and a coaxial choke coupler like the conventional one shown in Fig. 8 of the patent to Salisbury (R. 77) and in Fig. 1 of the patent to Espley (R. 69), the patents primarily relied upon by the Examiner in explaining why he considered petitioner Alford's invention unpatentable (R. 61). Although the Examiner did not question that petitioner Alford had demonstrated by affidavit evidence (R. 22-43) that his invention produced new and unexpected results, the Examiner said:

> Applicant has filed an affidavit and exhibit marked No. 1 to indicate the superiority and unexpected results of the claimed device. However this improvement is with respect to the conventional coupler, as exemplified by Espley and Salisbury, and has no bearing on the rejection of the instant case which is on a combination of references.
>
> The contention that the combination produces a new and unexpected result is not considered persuasive since the result set forth by applicant is inherent in the obvious combination of the references and hence does not cover patentability on the claimed combination (R. 62-63).

The secondary reference patent to Garfitt (R. 101-09), unlike petitioner Alford's invention and the conventional coaxial couplers exemplified by the Espley and Salisbury primary references which require insulating sections in both inner and outer conductors, has a solid inner conductor and a conducting septum which short circuits the inner conductor to the outer conductor to make the short-circuited section function

as a rectangular waveguide wrapped around the axis of the inner conductor. *Infra* 38.

The Patent Office Board of Appeals affirmed the Examiner (R. 63-67). The Court of Customs and Patent Appeals affirmed the Board, *infra* 28, Judge Rich and Judge Smith[2] dissenting with separate opinions. *Infra* 29-39. Its jurisdiction was invoked under 35 U.S.C. §§ 141-144.

Both Judge Martin, speaking for the majority, *infra* 25, and Judge Smith in his separate dissenting opinion, *infra* 37, relied on the opinion of this Court delivered by Mr. Justice Bradley in *Loom Co.* v. *Higgins*, 105 U.S. 580 (1881) to reach opposite conclusions on the pertinence of the new and unexpected electrical results produced by petitioner Alford's invention to meeting the conditions for patentability in 35 U.S.C. § 103.

The majority read *Loom Co., supra*, as demonstrating

> that unobviousness is a requirement for patentability and that the results attained amount only to evidence

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[2] Both Judge Rich and Judge Smith were practicing patent attorneys before being appointed to the bench. Judge Rich received a B.S. from Harvard College in 1926 and an LL.B. from Columbia University School of Law in 1929. DYNAMICS OF THE PATENT SYSTEM ix (Ball ed. 1960). Two concurring and the dissenting opinions of this Court referred to his testimony on the contributory infringement statutory provisions interpreted in *Aro Mfg. Co.* v. *Convertible Top Co.*, 365 U.S. 336 (1961).

Judge Smith, Lecturer in Patent Law at the University of Michigan prior to his appointment to the bench, is the author of the textbook on patent law used at George Washington University to teach many of the Patent Office Examiners the principles of patent law. *Smith*, PATENT LAW, Vols. I and II (1954). For a penetrating insight into the philosophy of the patent law and its relation to society and other areas of law, see *Id.* Vol. I, pp. iii-xiii, the preface written by Judge Smith during the first year of the Patent Act of 1952.

which may be pertinent to the determination of whether that requirement is met. *Infra* 25.

The majority appeared to accept the adequacy of petitioner Alford's evidence of advantages, *infra* 32, saying:

> Although the examiner and the board have questioned the *significance* of a comparative test between these two devices [the prior art coupler with inner and outer sleeve joints and petitioner's coupler], *they do not dispute appellant's* contention . . . *that the tested device having a disc joint in its outer conductor had less leakage loss* than the tested device using a sleeve joint in the outer conductor. *Infra* 25-26. (Emphasis added by Judge Rich, *infra* 32.)

Judge Rich, after concluding that the conclusion reached by the majority was wholly unjustified on the record, quoted that conclusion and explained why he thought it was wrong.

> "A person of ordinary skill in the art, with the objective of providing a coaxial coupler for use in the range of frequencies here involved, would have found in Garfitt a suggestion that a disc type joint, as well as a sleeve type joint, could be used to *reduce* energy leakage or radiation from the separated outer conductor, *such as the outer conductor of the Espley or Salisbury coupler.* There being no disclosure in Garfitt that either one of these joints [sleeve or disc] is more effective that the other in reducing leakage, it is our opinion that *it would have been obvious to construct* a coupler using *each* of the outer joints disclosed by that reference *and make comparative tests* of leakage *to determine* which construction was the most effective for the purpose at hand. Upon tests showing, as appellant's report [the affidavit evidence] indicates they would, that the coupler with the disc joint permits less leakage, *it would be obvious* for the worker *to choose* that construction. As a matter of fact, the tests that appellant did make had that effect." *Infra* 32-33. (Emphasis added by Judge Rich).

"The point I want first to emphasize in this rather cart-before-the-horse analysis of the situation is that, by the majority's own reasoning, the point at which it

became *obvious* what the construction of the coupler *should* be was at the very end of a considerable piece of research consisting of deciding to build *two* different couplers, building them, testing them, and determining what was best. It is usually thought that it is the purpose of the patent system to encourage such research, not to deprive people of patents because they have carried it on successfully."

"The next point is, that by the majority's own admission, the Garfitt patent does *not* suggest that a disc joint is any more effective in minimizing leakage of radiation than a sleeve joint. Since the art already had sleeve joints in coaxial choke couplers, inside and out, there is absolutely no suggestion in Garfitt to change that construction, and *it is on the basis that such a suggestion exists* that the Patient Office rejected the claims on a combination of either Espley or Salisbury with Garfitt."

"In any case, the majority approach to the problem nullifies the rule of law which has long been followed that the seeming obviousness of a combination, or a product, can be overcome by proof of unexpected advantageous results and the majority never denies the existence of such results in this case. Bypassing case law, the majority rests its decision on section 103, which was intended to aid the discoverers of such new and unexpected results. First it finds the *structure* obvious and then ignores the advantageous unexpected properties, as of any legal significance whatever, by saying that the structure would inherently provide the results and properties. The codification of the former requirement of 'invention' in section 103 was not intended to effect a substitution for one of the oldest positive indicators of the presence of patentable subject matter, namely, proven unexpected technical advantages, of the a priori judgment of non-technical courts as to the seeming obviousness to them of highly refined scientific instruments and devices." . . .

"Whatever the rationalizations behind the various refusals in this case to take into consideration the unexpected advantageous results and give them legal effect, such refusal is contrary to long and well established law."

"This is, in my opinion, a clear case for reversal." *Infra* 33-35.

Judge Smith said,

"In *Loom Company* v. *Higgins*, 105 U.S. 580, 591, the Supreme Court in commenting on a comparable situation said:

> . . . At this point we are constrained to say that we cannot yield our assent to the argument, that the combination of the different parts or elements for attaining the object in view was so obvious as to merit no title to invention. Now that it has succeeded, it may seem very plain to any one that he could have done it as well. This is often the case with inventions of the greatest merit. It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention. It was certainly a new and useful result to make a loom produce fifty yards a day when it never produced more than forty; and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent." *Infra* 37.

"35 U.S.C. 103 recognizes the doctrine of the *Loom Company* case, and to forestall the use of hindsight in testing the obviousness of the invention requires that patentability must be decided as of *the time the invention was made*. When thus considered, appellant's combination would not, it seems to me, have been obvious to one of ordinary skill in the art. I have been unable to find any teaching in the cited prior art from which I am willing to conclude that appellant's invention was obvious to one of ordinary skill in the art, or

which would suggest to such a person that he should take the course taken by appellant in producing his novel combination." *Infra* 37.

"I agree with Judge Rich that the majority's conclusion is inconsistent with the long established law in this court and elsewhere regarding the patentability of new combinations of old elements which produce results as unexpected as those which are reported in the record here. I am unable to reconcile the holding of the majority here with the principles I find in a long line of cases including *Loom Company* v. *Higgins*, supra, *The Barbed Wire Patent*, 143 U.S. 275, 283; *Expanded Metal Co.* v. *Bradford*, 214 U.S. 366, 381, ..." *Infra* 38-39.

The majority opinion did not mention the decisions of this Court in *The Barbed Wire Patent*, *supra*, and *Expanded Metal Co.* v. *Bradford*, *supra*, expounding principles thought by Judge Smith to be inconsistent with the holding of the majority.

A petition for rehearing explained that as long ago as 1850 this Court had stated in *Wilson* v. *Simpson*, 9 How. 109, 124 that

> [f]orm may be given to a piece of any material,—wood, metal, or glass,—so as to produce an original result, or to aid the efficiency of one already known, and that would be the subject for a patent.[3]

In a paper opposing that petition, the Patent Office Solicitor argued that the substance of the appealed claims related to an art in which ordinary skill is of an exceptionally high degree and that with respect to such an art, special care must be taken to distinguish between unobviousness to a person of less than ordinary skill in the art and unobviousness to a person of ordinary skill in the art.

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[3] This statement was recently quoted by Mr. Justice Black in his concurring opinion in *Aro*, 365 U.S. at 353.

Petitioner Alford is the inventor of loran.[4] Between his first patent No. 2,081,162 and his 100'th patent No. 3,011,167 are numerous patents covering his inventions still being used all over the world in ILS systems for guiding aircraft to a safe landing.[5] This Court apparently relied on his expert testimony and exhibits prepared by him and under his supervision in *Mackay Radio Co.* v. *R.C.A.*, 306 U.S. 86,101 (1939). See Transcript of Record, pp. 350-52, Defendant's Exs. G, S, T, Y, Z, BB, CC, DD, FF, GG and HH, pp. 744, 745, 746, 822, 823, 896-900. His work at the Harvard University Radio Research Laboratory during World War II finished with his writing the chapter on "Broadband Antennas" in the book prepared by staff members.[6] He was awarded the Presidential Certificate of Merit in 1948 and elected a Fellow of the Institute of Radio Engineers in 1942.[7]

Admission to the grade of Fellow is by election only in recognition of high achievement in radio engineering and related technical fields. At the end of 1961 the Institute of Radio Engineers had 96,551 members drawn from many countries throughout the world. Less than 1%, 964, were Fellows.[8]

Winfield W. Salisbury, the patentee in one of the patents primarily relied on by the Examiner to show the conventional choke coupler (R. 85), also worked at

[4] Patent No. 2,419,525. *Alford* v. *Loomis*, 45 C.C.P.A. (Patents) 807, 252 F.2d 571 (1958).

[5] Patent Nos. 2,682,050, 2,434,893, 2,372,651, 2,370,628, 2,307,184, 2,294,482, 2, 293,694, 2,241,756 and others. His directional localizer system invention covered by patent No. 2,682,650 will be added to existing Instrument Landing Systems at 12 locations in the United States. FAA News Relase No. 2 p. 6 (1962).

[6] 1 VERY HIGH FREQUENCY TECHNIQUES 1-25 (Reich ed. 1947).

[7] 1962 IRE DIRECTORY 29.

[8] 50 *Proceedings of the IRE* 540 (May 1962).

the Harvard University Radio Research Laboratory during World War II and was also elected a Fellow of the Institute of Radio Engineers. His citation read:

> For his contributions to the generation of high-power continuous-wave energy at ultra-high frequencies.[9]

Dennis C. Espley, a British subject and the patentee in the other of the patents primarily relied on by the Examiner to also show a conventional choke coupler (R. 71), was also elected a Fellow of the Institute of Radio Engineers. His citation read:

> For his creative contributions to microwave and television techniques in England.[10]

Reasons for Granting the Writ

1. The question of whether 28 U.S.C. § 1256 makes patent and trademark cases decided by the Court of Customs and Patent Appeals reviewable by certiorari in this Court was expressly left open in *Glidden Co.* v. *Zdanok*, 370 U.S. 530, 578 n. 49 (1962). That decision recognized that Congress had exercised its power granted under article I, § 8 of the Constitution in establishing the Court of Customs and Patent Appeals as an Article III court. The applicability of the provisions of Article III, § 2 of the Constitution concerning whether this Court could conclude that it was without jurisdiction to review a final decision of the Court of Customs and Patent Appeals refusing the grant of a patent when Congress expressly authorizes this Court to review cases in the Court of Customs and Patent Appeals by writ of certiorari, 28 U.S.C. § 1256, presents a serious constitutional question of vital importance to the logical distribution of the Article III judicial powers. The answer to this question has an im-

[9] 35 *Proceedings of the IRE* 385 (April 1947).

[10] 42 *Proceedings of the IRE* 872 (May 1954).

portant bearing on whether the final arbiter on the interpretation of federal statutes and the decisions of the Court arising in the Patent Office is to be the Supreme Court or the Court of Customs and Patent Appeals, an Article III tribunal inferior to the Supreme Court.

The practice of the Patent Office is to follow decisions of the Court of Customs and Patent Appeals, even when there is a conflict with a decision of the Court of Appeals for the District of Columbia, Ex parte *Mohr*, 77 U.S.P.O. 510, 512 (Pat. Off. Bd. of Appeals 1948).[11] If the Court concludes that it has no jurisdiction to review appeals from the Patent Office decided by the Court of Customs and Patent Appeals in accordance with the provisions of 35 U.S.C. §§ 141-144, then that court has the final say as to what rules of patent law shall be applied in the Patent Office except in those individual cases where an applicant challenges the decision of the Patent Office by bringing an action in a trial de novo against the Commissioner of Patents under the provisions of 35 U.S.C. § 145 in the District Court for the District of Columbia. In such individual cases this Court has already decided that it has jurisdiction to review the case after review by the

[11] The Chief Technical Advisor to the Court of Customs and Patent Appeals pointed out that the Patent Office relies overwhelmingly on decisions of that court as a basis for its decisions. A spot check of 100 recent decisions of the Patent Office Board of Appeals showed 130 decisions of the Court of Customs and Patent Appeals were cited as opposed to only 15 of the District of Columbia Court of Appeals, only 12 of this Court and only 18 of all other courts combined. That is, about 75% of all the decisions cited were those of the Court of Customs and Patent Appeals. *Reynolds, The Standard of Invention in the Patent Office* in DYNAMICS OF THE PATENT SYSTEM 1, 10 (Ball ed. 1960). Seeing that the Court of Customs and Patent Appeals establishes the correct interpretation of the conditions for patentability is therefore of vital importance to every applicant for a patent.

Court of Appeals for the District of Columbia. *Hoover Co.* v. *Coe*, 325 U.S. 79 (1945). And since the Patent Office refuses to follow decisions of other Courts of Appeals which it concludes are wrong, even in the absence of a conflict with the Court of Customs and Patent Appeals,[12] a conclusion that this Court is without jurisdiction to review patent cases in the Court of Customs and Patent Appeals places the latter court in the same supreme position with respect to interpretation of patent law in the Patent Office that this Court is in with respect to interpretation of federal patent law in all other Article III courts and in all state courts.

Regardless of whether inter parte decisions in *Postum Cereal Co.* v *California Fig Nut Co.*, 272 U.S. 693 (1927), *Pacific Northwest Canning Co.* v. *Skookum Packers Ass'n*, 283 U.S. 858 (1931) and *McBride* v. *Teeple*, 311 U.S. 649 (1940) are to be extended to bar review of a decision finally refusing to grant a patent on an invention which meets the conditions for patentability established by Congress in codifying decisions of this Court, the answer to the question is important to applicants and their attorneys who expend much time and effort in asking this Court to review Court of Customs and Patent Appeals decisions believed to be inconsistent with decisions of this Court, decisions of courts of appeals for the several circuits and the proper interpretation of federal statutes. The answer is of importance to the Court of Customs and Patent Appeals and the Patent Office in guiding these tribunals toward a source of proper interpretation of the con-

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[12] In an opinion by Examiner-in-Chief Frederico, the author of *Commentary on the New Patent Act*, 35 U.S.C.A., preceding § 1, the Patent Office refused to follow *Crane Packing Co.* v. *Spitfire Tool and Mach. Co.*, 276 F.2d 271 (7th Cir.), *cert. denied*, 363 U.S. 820 (1960) on the interpretation of 35 U.S.C. § 251 relating to reissue patents. Ex parte *Strassburger*, 127 U.S.P.Q. 417, 420 (Pat. Off. Bd. of Appeals 1960).

stitutionally authorized congressionally enacted judicially interpreted body of patent law leading to logical results based on standards uniformly applied throughout the land. And the answer must also be of importance to the Government, which we understand has argued that this Court is without jurisdiction to review cases in the Court of Customs and Patent Appeals finally denying the grant of a patent,[13] especially since the question was left open in *Glidden* v. *Zdanok*, 370 U.S. 530, 578 n. 49 (1962).

We have discussed above the serious constitutional questions involved and the likelihood of the courts and the Patent Office interpreting the same federal statute differently if this Court concludes that it has no jurisdiction to review cases in the Court of Customs and Patent Appeals. We recognize that the basis for the jurisdiction is by writ of certiorari, 28 U.S.C. § 1256, a writ granted by the Court based on considerations set forth in Rule 19. While the jurisdictional question is itself sufficiently special and important to grant the writ in this case, we now turn to a consideration of other factors which we believe justify review of this case in this Court.

2. Ever since this Court added a requirement of "invention" in 1850 in *Hotchkiss* v. *Greenwood*, 11 How. 248, to the previously traditional tests of novelty and utility, it has been recognized that not everything that is new is patentable. Back in 1881 a refined version of the *Hotchkiss* test was accepted in *Loom Co.* v. *Higgins*, 105 U.S. 580, which defined the standard of inven-

[13] *Stern and Gressman*, SUPREME COURT PRACTICE 49 (2d ed. 1954). The authors pointed out that the reasoning in *Postum* concerning the lack of binding effect of the rights of the parties did not apply to a situation where patent claims had been denied by the Court of Customs and Patent Appeals. They reasoned that such a denial means no patent grant would be issued and would accordingly seem final. *Id.* 48 n.25.

tion followed until modern times. Mr. Justice Bradley framed the test as follows:

> This argument [that the devices did not show invention] . . . . would be sound if the combination claimed by [patentee] . . . was an obvious one for attaining the advantages proposed,—one which would occur to any mechanic skilled in the art. . . . It may be laid down as a general rule . . . that if a new combination and arrangement of known elements, produces a new and beneficial result, never attained before, it is evidence of invention. *Id.* 591.

The instant case involves the interpretation of the first statutory definition in the history of the patent laws of what was formerly called invention by the courts. The statute has been in force since January 1, 1953 and while lower court opinions do not seem to be in agreement as to whether the conditions for patentability in 35 U.S.C. § 103 relax or adopt the pre-1953 standard of invention applied by this Court,[14] we know of no decisions which suggest that 35 U.S.C. § 103 was to make it harder for inventors to obtain valid patents. By refusing to give legal effect to the unexpected advantageous results produced by petitioner Alford's new combination, the court below has relied on the statutory provisions to reach a result that is inconsistent with the *Loom* test, a test which we believe was codified in 35 U.S. § 103,[15] inconsistent with other decisions of this Court,[16] and inconsistent with decisions

[14] Compare the observations of Judge Kalodner in *R. M. Palmer Co.* v. *Ludens, Inc.*, 236 F.2d 496, 499 (3d Cir. 1956) with those of Judge Learned Hand in *Lyon* v. *Bausch & Lomb Optical Co.*, 224 F.2d 530 (2d Cir.), *cert. denied*, 350 U.S. 911 (1954).

[15] H. R. Rep. No. 1923, 82nd Cong., 2d Sess. 7 (1952).

[16] *Williams Mfg. Co.* v. *United Shoe Mach. Corp.*, 316 U.S. 364, 367 (1942); *Eibel Process Co.* v. *Minnesota and Ontario Paper Co.*, 261 U.S. 45, 66 (1923); *Expanded Metal Co.* v. *Bradford*, 214 U.S. 366, 381 (1909); *The Barbed Wire Patent*, 143 U.S. 275, 283 (1892); *Smith* v. *Goodyear Dental Vulcanite Co.*, 93 U.S. 486, 496-97 (1877).

of courts of appeals.[17] By refusing to recognize that the words "subject matter as a whole" in 35 U.S.C. § 103 embrace new and beneficial results never attained before and the discovery of theoretical principles of operation leading to these results, the court below made a complete departure from the accepted and usual understanding that a new combination is patentable if it produces a new and beneficial result never attained before. We are unable to see a logical distinction between the later treatment of the court below of the cause of a bearing failure and its elimination by the claimed plating of a specific area as part of the subject matter as a whole referred to in § 103[18] and the refusal of the majority in this case to consider the cause of leakage radiation and its marked reduction by the claimed coaxial choke coupler with a disc joint in the outer conductor as part of the subject matter as a whole.

It is apparent that the interpretation of the statutory provisions defining the conditions for patentability, one of the two major innovations in the statute,[19] is of great importance to the Patent Office in deciding whether a patent should be granted on an application prosecuted ex parte, to the courts in deciding whether a patent being litigated was properly granted, and of no less importance to the many scientifically-oriented small businessmen like petitioner Alford who carry out costly time-consuming research to discover principles leading to solutions like that embodied in this invention, hoping that success will be rewarded with the

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[17] *E.g., Lyon* v. *Bausch & Lomb Optical Co.*, *supra* n. 14; *Beatty Safway Scaffold Co.* v. *Up-Right, Inc.*, 134 U.S.P.Q. 379, 384 (9th Cir. 1962); *Universal, Inc.* v. *Kay Mfg. Corp.*, 301 F.2d 140, 147 (4th Cir. 1962).

[18] In re *Conover*, 134 U.S.P.Q. 238, 241 (C.C.P.A. 1962).

[19] H.R. Rep. No. 1923, 82d Cong., 2d Sess. 5 (1952).

privileges of a patent covering that solution.[20] For without adequate patent protection small businessmen would be better off copying and manufacturing known devices rather than developing new devices which their competitors with large production facilities can make and sell at prices based on costs free from the expenses of research. These statutory provisions, in their tenth year of applicability, have not been but ought to be interpreted by this Court. And now is the time for the Court to interpret these provisions consistent with the constitutionally declared role of the patent system to promote the progress of science and the useful arts, a time when the vitality of individual inventors like petitioner Alford stimulated by the carrot effect of the patent grant is of the utmost importance for the progress and welfare of our nation adjusting to an international environment of rapid technological and scientific change.

3. The decision of the court below is wrong. Congress has acted to carry out the express constitutional purpose by defining conditions for patentability in the light of decisions of this Court which have recognized for more than a century that whatever else might denote the progress referred to in the Constitution, the surest objective test yet devised for application by non-technical judges is proven unexpected technical advantages. Since the Patent Office expressly provides for receiving evidence of technical superiority based on comparative tests between devices in the prior art

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[20] Most of petitioner Alford's patented inventions belong to his former employer, the I.T.&T. His Alford Manufacturing Co. sales volume each year is now between $500,000 and $1,000,000. ELECTRONIC'S BUYERS GUIDE M2, M4, (July 25, 1962). The 1962 Alford Mfg. Co. catalog SK of instruments and components lists 45 patents owned by Alford, at least some of which have helped him to build a growing business supplying vital precision electronic instruments and components to Government and industry.

cited by the Examiner and the device sought to be patented,[21] we think that application of the *Loom* rule codified in 35 U.S.C. § 103 to Patent Office proceedings requires a conclusion that whenever an applicant demonstrates by affidavit evidence that the claimed invention unexpectedly outperforms a device disclosed in the prior art relied upon by the Examiner in initially refusing to grant a patent on that claimed invention in comparative tests, the applicant has made a prima facie case supporting the grant of a patent on that claimed invention. Measured by this test, petitioner Alford's claimed invention, which provides low frequency isolation, maintains a desired low standing wave ratio over a wide bandwidth and radiates much less leakage energy than that radiated by a comparable conventional coaxial choke coupler as established by affidavit evidence, meets the conditions for patentability adopted by Congress and promulgated by this Court for over a century. To say that the subject matter as a whole would have been obvious to one having ordinary skill in the radio engineering art when men of extraordinary skill in the art like Salisbury and Espley, honored as elected Fellows for their accomplishments in the field of this invention by their brother radio engineers, high frequency radio engineers who were unquestionably familiar with both sleeve and disc quarter wavelength choke joints, each of whom nevertheless built conventional coaxial choke couplers having only sleeve joints on opposite sides of the Atlantic, is aptly characterized by Judge Rich as a "cart-before-the-horse analysis." *Infra* 33.

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[21] 35 U.S.C. § 1.132 (1958); Manual of Patent Examining Procedure 112 (3d ed. 1961).

Conclusion

For at least the foregoing reasons, this petition for a writ of certiorari should be granted.

Respectfully submitted,

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APPENDIX A

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

In the Matter of the Application of Andrew Alford	*October Term*	1961.
	Patent Appeal No.	6757.
	Serial No.	596,930.

Martin, Judge.

This appeal is from the decision of the Patent Office Board of Appeals affirming the action of the Primary Examiner in refusing to allow claims 19, 20 and 22 of application Serial No. 596,930, filed July 10, 1956, entitled "Coaxial Choke Coupler." Claim 21, the only other claim in the application, was allowed by the examiner.

Claim 19 is representative of the appealed claims and reads as follows:

19. A coaxial choke coupler for transmitting high frequency energy over a band in the range from 100 megacycles to 5000 megacycles about a mean frequency, said coupler comprising, coaxial inner and outer conductors, inner and outer insulting sections in said inner and outer conductors respectively, said sections dividing each conductor into first and second portions, said inner conductor insulating section being coextensive with the first and second portions of said inner conductor along the axis common to said conductors for a distance substantially equal to a quarter wavelength for energy in said center conductor insulating section of said mean frequency, said outer conductor having a pair of opposed spaced flanges at adjacent ends of said first and second portions thereof extending radially outward from an [d] orthogonal to said common axis, said outer conductor insulating section being a thin annular disk orthogonal to said common axis with opposite sides in contact with both opposed faces of said spaced flanges for a radial distance substantially equal to a quarter wavelength for energy in said outer conductor insulating section at said mean frequency.

Appellant's application discloses a coaxial choke coupler for connecting two coaxial cable sections to transmit electrical energy therebetween at high frequencies of an order of 100 megacycles to 5000 megacycles. In connection with high frequencies, it is disclosed that the coupler operates with slight leakage and a minimum of impedance between the line sections. The application states:

> The device of the present invention may have many uses, as for instance in mounting a high, ultra high, or super high frequency transmitter on top of a low frequency insulated radio tower. In this case the problem is to transmit these very high frequencies through the tower which is insulated and maintained at potential above the ground without disturbing the existing electric system.

The coupler includes an inner conductor spaced concentrically within a hollow outer conductor with the conductors adapted for connection at each end to the corresponding conductors of one of the coaxial cable portions to be interconnected. A longitudinal or sleeve type insulating joint having a length corresponding to a quarter wavelength at the mean or average frequency to be transmitted is interposed midway in the inner conductor of the coupler. Interposed in the outer conductor is a radial or disc type insulating joint comprising two opposed disc members which extend orthogonally outward in spaced insulated relationship. The radial distance that the discs extend from the outer conductor portions is made equal to approximately a quarter wavelength at the mean frequency of the energy to be transmitted.

The application also discloses a modified construction referred to as a three stage coupler. That structure does not require description here since the additional features it involves are not recited in the claims on appeal.

The references relied on are:

Espley	2,401,344	June	4, 1946
Salisbury	2,451,876	October	19, 1948
Garfitt (British)	598,375	February	17, 1948

The Espley patent discloses a coaxial coupler for transmitting high frequency energy between two coaxial cable portions. Joint sections are interposed in both the inner and outer conductors of the coupler. The joint in the inner conductor is of the longitudinal type and is described as being a quarter wavelength in length. The joint in the outer conductor comprises a longitudinal sleeve section formed by an end portion of increased diameter coaxially surrounding the other end portion over a length corresponding to a quarter of a wavelength.

The Salisbury patent discloses a high frequency coaxial line coupler which, like that of Espley, utilizes sleeve type joints of a quarter wavelength in both the inner and outer conductors.

The British patent to Garfitt relates to a coupler for connecting two wave guide portions which are relatively offset or are arranged for relative angular movement. The coupler comprises a continuous central conductor having an end extending into the interior of each of the wave guide portions and an outer conductor which is separated into two sections and disposed concentrically about the central conductor between the surfaces of the wave guide portions. It is stated in the patent that the central conductor, "instead of being supported inside the outer conductor by spacers of solid dielectric material as is usual in the coaxial cable type of feeder," is supported by a rectangular metal plate or septum secured to the inside of the outer conductor.

The construction of the outer conductor of Garfitt is described as follows:

> The outer conductor of the feeder arrangement 3 is split transversely into two coaxial parts 3′ and 3″ at a point clear of the septum 7, the parts 3′ and 3″ being fixed respectively to the waveguide portions 1 and 2. A capacity joint 8 is provided between the adjacent ends of the parts 3′ and 3″ *to reduce energy leakage*. This may be of either of the forms illustrated in section in Figures 2 and 3. The spacing of the overlapping parts

> may be about 1 mm. and the length of the passage between them equal to about one quarter of a wavelength (of the transmitted energy in air). [Emphasis ours.]

Figure 2; referred to in the quotation, shows a longitudinal or sleeve type joint in the outer conductor. Figure 3 shows a radial or disc type joint such as is employed in appellant's coupler.

The examiner rejected the claims on the ground that use of a disc type coupling or joint in place of the sleeve type joint in the outer conductor of the coaxial couplers of Espley and Salisbury would be obvious to one skilled in the art in view of Garfitt's showing of sleeve and disc type joints as alternatives for use in the outer conductor of his coupling device. In connection with that holding, the examiner stated:

> Applicant's device and the references of record are all concerned with the passage of energy without substantial radiation. The inner conductor by its use of the quarter wave-length sleeve joint will appear as a solid conductor for the band of frequencies to be passed. Although the inner conductor of Garfitt is solid, its teaching of the alternative use of sleeve or disc coupling for the outer conductor is not impaired since the inner conductors of the primary references can also be considered as a solid conductor for the band of frequencies involved. Although Garfitt will not provide D.C. or low frequency isolization [isolation] both Espley and Salisbury will, and the rejection has been made on the combination of these references. It will be noted * * * that the couplings of Garfitt are used to reduce "energy leakage" or radiation.

It was further stated by the examiner that:

> The contention that the combination produces a new and unexpected result is not considered persuasive since the result set forth by applicant is inherent in the obvious combination of the references and hence does not confer patentability on the claimed combination * * *.

In affirming the examiner's rejection, the board stated:

> In our opinion the substitution of a radial type joint such as shown in Fig. 3 of Garfitt for the joints of the

basic references would [be] obvious to one skilled in the art, since Garfitt teaches the interchangeable use of the longitudinal and radial choke joints for preventing radiation losses in a coaxial choke coupler. * * *

Appellant concedes that "the change made * * * in modifying a prior art coaxial choke coupled having sleeve joints in the inner and outer conductors to include a disc line joint instead of the sleeve joint in only the outer conductor is but a slight change mechanically." He contends, however, that his coupler is not obvious under 35 U.S.C. 103, urging in support of the contention that the coupler provides new and unexpected results.

Relying on *Loom Company* v. *Higgins*, 105 U.S. 580 and *In re Ratti*, 46 CCPA 976, F. 2d 810, 123 USPQ 349, apellant appears to take the position that the production of a new or improved result, rather than unobviousness, is the criterion to be applied to a rejection on a combination of references. However, these decisions, rendered more than seventy-five years apart, actually demonstrate, consistently with 35 U.S.C. 103, that unobviousness is a requirement for patentability and that the results attained amount only to evidence which may be pertinent to the determination of whether that requirement is met.

Referring to the present case, appellant states:

> The new and unexpected results of the claimed invention are established by the affidavit * * * and accompanying Exhibit 1 * * *.

That exhibit, which reports tests said to have been made in 1950 under appellant's guidance, includes a graph comparing leakage losses of a coaxial choke coupler having a disc joint in its outer conductor and a sleeve joint in its inner conductor with the losses of a coupler having sleeve joints in both its inner and outer conductors. Although the examiner and the board have questioned the significance of a comparative test between these two devices, they do not dispute appellant's contention that the graph indicates that the tested device having a disc joint in its outer con-

ductor had less leakage loss than the tested device using a sleeve joint in the outer conductor.

In referring to that exhibit, appellant's attorney asks:

> Would a man of his stature have an engineering report prepared back in 1950 describing the differences in results between his invention and a comparable prior art device involving tedious careful measurements unless his sincere, expert opinion was that the differences in results were unpredictable and at that time unexplainable?

Although appellant's reason for having the report prepared is not itself material, we think that his attorney's query leads to consideration of the factors which are determinative of the controlling issue here. In 1950, the Espley, Salisbury and Garfitt patents had all recently become available to the public. A person of ordinary skill in the art, with the objective of providing a coaxial coupler for use in the range of frequencies here involved, would have found in Garfitt a suggestion that a disc type joint, as well as a sleeve type joint, could be used to reduce energy leakage or radiation from the separated outer conductor, such as the outer conductor of the Espley or Salisbury coupler. There being no disclosure in Garfitt that either one of these joints is more effective than the other in reducing leakage, it is our opinion that it would have been obvious to construct a coupler using each of the outer joints disclosed by that reference and make comparative tests of leakage to determine which construction was most effective for the purpose at hand. Upon the tests showing, as appellant's report indicates they would, that the coupler with the disc joint permits less leakage, it would be obvious for the worker to choose that construction. As a matter of fact, the tests that appellant did make had that effect.

Appellant argues that the matter of maintaining low leakage is not the only problem associated with coaxial choke couplers. He states in his brief:

> In its decision affirming the Examiner, the Board of Appeals discussed only one of the problems associated

with coaxial choke couplers, the problem of maintaining low leakage radiation from the exposed gap in the outer conductor***. The Board did not discuss the problem of maintaining a low VSWR[1] over a wide bandwidth in the high frequency range while intercoupling both the inner conductors and the outer conductors by a low effective series capacity (low capacity presents high impedance at low frequencies) to effectively isolate the two coaxial transmission lines, intercoupled by the invention, at low frequencies***.

* * *

We recognize and have always conceded that a disc line quarter wavelength choke joint is old. Its property of presenting a low impedance between conductors that it intercouples has long been recognized as the equivalent of the same property of a quarter wavelength sleeve joint. But the properties of a disc line joint different from those of a sleeve joint *not* recognized in the prior art are that it will radiate less leakage power with a wider gap while still coacting with an inner conductor sleeve joint to provide a coaxial choke coupler with a low VSWR over a wide bandwidth.

We do not find appellant's contentions to indicate error in the board's decision. It is not disputed that the substitution of the quarter wavelength disc joint of Garfitt for the quarter wavelength sleeve joints in the outer conductors of the couplers of the basic references results in a coupler of the construction defined in the claims on appeal. The structure which is obvious from the prior art thus would,

[1] VSWR, not defined in the application, apparently is an abbreviation of voltage standing-wave ratio. See Radio Engineering, Terman, Third Edition, McGraw-Hill (1947), page 79, footnote 1 which reads:

> Standing-wave ratio as used here is expressed in terms of voltage (or current) and is sometimes referred to as voltage-standing wave ratio (abbreviated VSWR), to distinguish from the ratio expressed in terms of power (proportional to the square of the voltage).

Standing-wave ratio is described in Terman as a measure of the relationship of reflected and incident waves in a transmission line.

as indicated by the examiner, inherently provide the same results and properties as the device claimed by appellant.

Appellant's arguments concerning maintenance of a low standing wave ratio are not persuasive for another reason also. Although the affidavit and exhibit, by which appellant states the "new and unexpected results of the claimed invention are established," report measurements of the standing wave ratio of a coupler having a flange type joint, they do not provide a comparison with any other structure. Such measurements obviously fail to establish superiority as to that characteristic.

Appellant also argues that a disc joint permits the use of a wider gap. That argument is not significant since the application does not disclose a particular gap width or that this width should be greater than in a sleeve type joint.

The decision of the board is *affirmed*.

AFFIRMED

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

In the Matter of the Application of Andrew Alford	*October Term* 1961, *Patent Appeal No.* 6757. *Serial No.* 596,930.

Rich, Judge, dissenting.

Upon review of the record and the views of the examiner and the Board of Appeals I observe what, to me, are certain fatal defects in the reasoning by which they reached the conclusion that the invention defined by the claims on appeal is unpatentable. Appellant has more than adequately pointed out these defects in his brief and, in my judgment, the brief of the Patent Office Solicitor, thereafter filed, either failed to answer them or avoided discussion of them.

The situation as it appears to me is this:

Alford, a man of great skill and experience and a recognized expert in the radio field, by making what appears through hindsight to be a relatively simple mechanical change, combined certain features old in this art to obtain improved electrical results and advantages.

The principal alleged advantage, constantly reiterated in the application, is reduction in leakage of radiation from already known coaxial choke couplers used in coaxial lines for transmitting high to very high radio frequencies. As Alford's brief points out, coaxial choke couplers were "conventional", they couple high frequency energy from one coaxial line to another while insulation separates both the inner and outer conductors of one line from those of the other. Such couplers had insulated *sleeve* joints in the inner *and outer* conductors and it was also known to make the sleeves of a length corresponding to a quarter wavelength, for the mean wavelength of the frequency band to be conducted, for reasons well known to the art. This is no part of the invention.

As Alford's brief frankly states, it was also known at the time he made his invention, and as shown by the Garfitt British patent, to use annular disc or flange capacity (i.e. separated and insulated) joints of quarter wavelength dimension in coupling hollow tubes used as wave guides to conduct oscillatory electromagnetic energy at ultra-high frequencies. Garfitt shows such a disc joint *and he also shows a sleeve joint* and that their dimension is a quarter wave length; and he says that the reason one uses such a joint (either sleeve or disc) is "to reduce energy leakage." The important thing to notice about the Garfitt disclosure is, however, that his teaching is that *so far as minimizing leakage is concerned, it doesn't make any difference which kind of joint you use.*

Now Alford was not just inventing joints. What he was trying to do and in fact did was to design a coaxial choke coupler with reduced radiation leakage — *less* leakage than is present in the conventional coaxial choke couplers with two sleeve joints.

The invention which he made and is claiming in the claims on appeal is a *new combination*, not a flange joint. The combination is a coupler with all the known features of coaxial choke couplers such as inner and outer conductors and spacing filled with insulation and joints of quarter wave length dimensions *but* wherein the inner conductor joint or coupling is a sleeve joint and the *outer* tubular conductor *joint is a disc or flange joint.* This *combination* was unknown to the art. It is the combination which produces the improved results.[1] The two coaxial

[1] In truth this would appear to be something of an over-simplification since a full explanation of *why* there is an improvement in the radiation leakage situation requires going into much greater detail such as that set forth in the 5 printed pages of the Alford affidavit exhibit and its accompanying illustrations and graphs. It appears to me that it was Alford's contribution to the art, as appears from that exhibit, that "Disc line couplers have lower radiation for a given value of low-frequency capacitance." I find no suggestion of this phenomenon in the prior art of record, but rather a contrary indication.

coupler references show sleeve joints in both conductors. Garfitt shows a joint in the outer tubular wave guide which can be either sleeve or disc — with no reason for preferring either — and no joint whatever in his inner conductor, since he does not have the kind of a coaxial *choke* coupler with which Alford is concerned.

Viewed by hindsight, and as a mere mechanical construction, the new combination may appear to be a slight change and one which would perhaps be of no significance to the art *but for the fact that it produces advantageous results which the prior art does not suggest could be achieved by the change made.*

Alford invented a coaxial choke coupling that reduced radiation leakage loss by combining old elements *in a new way* which the art did not suggest doing. At least in my view of the matter the art did not suggest doing it. The majority would perhaps say, with the Patent Office, that Garfitt suggests doing it but I challenge such a view. The art was already using outer conductor sleeve joints in choke couplings. Garfitt shows both sleeve and disc couplings and says, in effect, that if they are quarter wave length *they both reduce leakage equally well.* So clearly this patent contains no suggestion to use a disc coupling in place of a sleeve joint in the outer conductor of a choke coupling to reduce leakage further than it has already been reduced (or, more accurately, minimized) by the use of the supposedly equally good sleeve joint.

Challenged with the proposition that the substitution was obvious, Alford countered with the time-honored answer that even if it appeared so on its face it nevertheless resulted in a patentable invention since the advantages produced were substantial and unpredictable, establishing them by affidavit evidence. I have no doubt that under a long line of cases in this court, as well as in other courts, such proof with respect to an admittedly new combination would have been found acceptable to establish patentability

prior to 1952, when the requirement of "invention" was put into the statute, 35 U.S.C. 103, in terms of what would be unobvious to one of ordinary skill in the art at the time the invention was made. *In re Holt*, 34 CCPA 1129, 162 F. 2d 472, 74 USPQ 155. Since section 103 clearly was not included in the statute for the purpose of making it more difficult for the inventors of new combinations to obtain patents on their inventions which produce new, unexpected, and advantageous *results* which would (by virtue of unexpectedness) not have been obvious, I can see no reason for ignoring established case law. A casual perusal of the legislative history of section 103 will show that the intent was that it should have exactly the opposite effect it is being given in this case.

The majority appears to accept the adequacy of Alford's evidence of advantages, saying:

> Although the examiner and the board have questioned the *significance* of a comparative test between these two devices [the prior art coupler with inner and outer sleeve joints and applicant's coupler], *they do not dispute appellant's contention**** *that the tested device having a disc joint in its outer conductor had less leakage loss* than the tested device using a sleeve joint in the outer conductor. [My emphasis.]

The majority proceeds from an examination and apparent acceptance of appellant's contention to the following conclusion, which I regard as wholly unjustified on the record before us:

> A person of ordinary skill in the art, with the objective of providing a coaxial coupler for use in the range of frequencies here involved, would have found in Garfitt a suggestion that a disc type joint, as well as a sleeve type joint, could be used to *reduce* energy leakage or radiation from the separated outer conductor, *such as the outer conductor of the Espley or Salisbury coupler.* There being no disclosure in Garfitt that either one of these joints [sleeve or disc] is more effective than the other in reducing leakage, it is our opinion that *it would have been obvious to construct* a coupler using *each* of

> the outer joints disclosed by that reference *and make comparative tests* of leakage *to determine* which construction was the most effective for the purpose at hand. Upon tests showing, as appellant's report [the affidavit evidence] indicates they would, that the coupler with the disc joint permits less leakage, *it would be obvious* for the worker *to choose* that construction. As a matter of fact, the tests that appellant did make had that effect. [My emphasis.]

The point I want first to emphasize in this rather cart-before-the-horse analysis of the situation is that, by the majority's own reasoning, the point at which it became *obvious* what the construction of the coupler *should* be was at the very end of a considerable piece of research consisting of deciding to build *two* different couplers, building them, testing them, and determining which was best. It is usually thought that it is the purpose of the patent system to encourage such research, not to deprive people of patents because they have carried it on successfully.

The next point is, that by the majority's own admission, the Garfitt patent does *not* suggest that a disc joint is any more effective in minimizing leakage of radiation than a sleeve joint. Since the art already had sleeve joints in coaxial choke couplers, inside and out, there is absolutely no suggestion in Garfitt to change that construction, and *it is on the basis that such a suggestion exists* that the Patent Office rejected the claims on a combination of either Espley or Salisbury with Garfitt.

In any case, the majority approach to the problem nullifies the rule of law which has long been followed that the seeming obviousness of a combination, or a product, can be overcome by proof of unexpected advantageous results and the majority never denies the existence of such results in this case. By-passing case law, the majority rests its decision on section 103, which was intended to aid the discoverers of such new and unexpected results. First it finds the *structure* obvious and then ignores the advantageous unexpected properties, as of any legal significance what-

ever, by saying that the structure would "inherently provide the * * * results and properties." The codification of the former requirement of "invention" in section 103 was not intended to effect a substitution for one of the oldest positive indicators of the presence of patentable subject matter, namely, proven unexpected technical advantages, of the a priori judgment of non-technical courts as to the seeming obviousness to them of highly refined scientific instruments and devices.

In voicing this theory of obvious structure with "inherent" advantages—advantages which are to be ignored in deciding the issue of patentability—the majority is uncritically accepting the theory first propounded by the examiner who said:

> The contention that the combination produces a new and unexpected result is not considered persuasive since the result set forth by applicant is *inherent in the obvious combination of the references* and hence does not confer patentability on the claimed combination. [My emphasis.]

What he meant, of course, was that the advantages, the existence of which he did not deny, were inherent *in applicant's claimed invention* which, in his view, would have been obvious over the references as he combined them in making the rejection. In other words, he too ignored the advantages. In fact he said in his answer that "this improvement * * * has no bearing on the rejection of the instant case which is on a combination of references," which is something of a non sequitur.

As to this combination-of-references rejection and the significance of the affidavit proof, the board had a different idea. It said, "assuming *arguendo* that the affidavit establishes that the instant joint in the external cylindrical conductor is less lossy than the joint in the outer conductors of either Salisbury or Espley," the comparative test should have been made "between the instant device and the device of Garfitt; or Salisbury or Espley modified in the light of

Garfitt." In the absence of such data, the board expressed its intention to ignore the tests.

As to making a comparative test with Garfitt on radiation loss, I can see no possibility of this because Garfitt does not have a coaxial choke coupler at all, nor a coaxial transmission line.

As to the suggested comparison between the claimed coupler and the coupler of either *Salisbury of Espley modified in the light of Garfitt*, this is foolishness. As appellant's brief points out in Point III, it "is nothing more than a requirement to compare the results of the invention with the results of the invention."

Whatever the rationalizations behind the various refusals in this case to take into consideration the unexpected advantageous results and give them legal effect, such refusal is contrary to long and well established law.

This is, in my opinion, a clear case for reversal.

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

IN THE MATTER OF THE APPLICATION OF ANDREW ALFORD	*October Term* 1961. *Patent Appeal No.* 6757. *Serial No.* 596,930.

SMITH, Judge, dissenting.

I am unable to agree with the conclusion reached by the majority, that since appellant's invention appears to be a *structurally* simple device, it is no more than an obvious combination of old elements. We should judge such a combination by the purpose which dictated its creation. *Traitel Marble Co.* v. *U. T. Hungerford Brass & Copper Co.*, 18 F. 2d 66 (CCA 2d), cert. denied, 274 U.S. 753.

Appellant's purpose in making the new combination embodying his invention was to meet the need for a coaxial choke coupler with less radiation leakage than couplers previously known while maintaining a low VSWR[1] in the coupler. Appellant succeeded in doing this by creating a new combination of individually old elements. What we are here concerned with is not these elements per se but rather with the new *combination* of those elements which, as shown by appellant's affidavit and the exhibit thereto, produces results of a magnitude which was unexpected from the prior art teachings.[2]

The majority, in finding appellant's invention structurally obvious over the prior art seems to me to have ignored the unexpected results achieved by appellant's new com-

[1] I am here using this term in the sense and with the meaning ascribed to it in the majority opinion, i.e., "voltage standing-wave ratio."

[2] I refer here to the teachings that sleeve and radial disc joints have equal effect in minimizing radiation leakage.

bination of elements. It is only *after* appellant's concept becomes known that his solution to the problems he encountered may appear to have been obvious. Only when viewed *after* appellant's concept had been embodied in the claimed structural combination, is it possible to see it as an obvious combination of the old elements shown in the references.

In *Loom Company* v *Higgins*, 105 U.S. 580, 591, the Supreme Court in commenting on a comparable situation said:

> *** At this point we are constrained to say that we cannot yield our assent to the argument, that the combination of the different parts or elements for attaining the object in view was so obvious as to merit no title to invention. Now that it has succeeded, it may seem very plain to any one that he could have done it as well. This is often the case with inventions of the greatest merit. It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention. It was certainly a new and useful result to make a loom produce fifty yards a day when it never before had produced more than forty; and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent.

35 U.S.C. 103 recognizes the doctrine of the *Loom Company* case, and to forestall the use of hindsight in testing the obviousness of the invention requires that patentability must be decided as of *the time the invention was made*. When thus considered, appellant's combination would not, it seems to me, have been obvious to one of ordinary skill in the art. I have been unable to find any teaching in the cited prior art from which I am willing to conclude that appellant's invention was obvious to one of ordinary skill in the art, or which would suggest to such a person that he should take the course taken by appellant in producing his novel combination.

The examiner and the board would avoid the effect of appellant's affidavit and exhibit which show the surprisingly superior results achieved by appellant's coaxial coupler, for the reason that they do not show comparative radiation loss tests with the Garfitt device. Garfitt, it seems to me, discloses nothing but a coupling for hollow tubes used as wave guides. It is not a coaxial coupler of the type disclosed by appellant.

The Espley and Salisbury references, like the claimed invention, require insulating sections in series with *both* inner and outer conductors in order to function as a *coaxial transmission line*. The Garfitt references, while it discloses a conducting septum, uses this septum to *short circuit* the inner conductor to the outer conductor, and thus functions as a *rectangular waveguide*.

While the low impedance of a disc line quarter wave length choke joint between two conductors was recognized in the art, its coaction with an inner conductor sleeve joint to provide a coaxial choke coupler with low VSWR over a wide band width cannot be shown by comparative test with Garfitt unless Garfitt is first modified, in the manner taught by appellant, so that it can function as such a coaxial choke coupler. I agree, therefore, with appellant's view set forth in the dissenting opinion of Judge Rich that this requirement "is nothing more than a requirement to compare the results of the invention with the results of the invention."

I also am unwilling to approve, as of the time appellant's invention was made, the suggestion made by the board that the couplers shown in Salisbury and Espley could be modified by the Garfitt device. This modification, it seems to me, was first suggested in this art by appellant.

I agree with Judge Rich that the majority's conclusion is inconsistent with the long established law in this court and elsewhere regarding the patentability of new combinations of old elements which produce results as unexpected as those which are reported in the record here. I am un-

able to reconcile the holding of the majority here with the principles I find in a long line of cases including *Loom Company* v. *Higgins*, supra, *The Barbed Wire Patent*, 143 U.S. 275, 283; *Expanded Metal Co.* v. *Bradford*, 214 U.S. 366, 381; *In re McKenna et al.*, 40 CCPA 937, 203 F. 2d 717, 97USPQ 348, and *In re Holt*, 34 CCPA 1129, 162 F. 2d 472, 74 USPQ 155.

I would, therefore, reverse the decision of the board.